

Advisory Council on Clean Air Compliance Analysis

Air Quality Modeling Subcommittee

FY 2004 Member Biosketches

Air Quality Modeling Subcommittee

Allen, David T. Chair

University of Texas

Dr. David Allen is the Gertz Professor of Chemical Engineering and the Director of the Center for Energy and Environmental Resources at the University of Texas at Austin. His research interests lie in environmental reaction engineering, particularly issues related to air quality and pollution prevention. He is the author of four books and over 125 papers in these areas. The quality of his research has been recognized by the National Science Foundation (through the Presidential Young Investigator Award), the AT&T Foundation (through an Industrial Ecology Fellowship) and the American Institute of Chemical Engineers (through the Cecil Award for contributions to environmental engineering). Dr. Allen was a lead investigator in one of the largest and most successful air quality studies ever undertaken: the Texas Air Quality Study (www.utexas.edu/research/ceer/texaqs). His current research is focused on using the results from that study to provide a sound scientific basis for air quality management in Texas. In addition, Dr. Allen is actively involved in developing Green Engineering educational materials for the chemical engineering curriculum. His most recent effort is a textbook on design of chemical processes and products, jointly developed with the U.S. EPA. Dr. Allen received his B.S. degree in Chemical Engineering, with distinction, from Cornell University in 1979. His M.S. and Ph.D. degrees in Chemical Engineering were awarded by the California Institute of Technology in 1981 and 1983. He has held visiting faculty appointments at the California Institute of Technology, the University of California, Santa Barbara, and the Department of Energy.

Chock, David

Ford Motor Company

David P. Chock received his B.A. degree with highest Honors in Chemistry from the University of California at Santa Barbara, and his Ph.D. degree in Chemical Physics from the University of Chicago. He was a Postdoctoral Fellow at the State University of New York at Buffalo, the Free University of Brussels, and the University of Texas at Austin, conducting research in electron-phonon interactions in semiconductors, dynamics of critical phenomena and hydrodynamic stability, respectively. He joined the General Motors Research Laboratories, and subsequently, Ford Research Laboratory, where he is the Leader of the Environmental Modeling Group in the Physical and Environmental Sciences Department. He has conducted a wide range of research related to the environment and its impact. This includes pollutant dispersion near roadways, improvement of numerical methods in air quality modeling by introducing accurate and fast algorithms to solve the advection equations and the stiff differential equations, extreme-value statistics of serially correlated data, time-series analysis, ozone trend analysis, statistical characteristics of the National Ambient Air Quality Standards, use of the random walk approach to study the impact of grid resolution and subgrid assumptions on air quality model predictions of a convective system containing fast non-homogeneous atmospheric chemistry, and ozone impact of emissions from vehicles using alternative fuels, assessment of the benefit of an ozone-scavenging system for ambient ozone reduction. He has also conducted epidemiological studies, including the effect of confounding on results of incomplete models, the association of daily mortality and pollutant concentrations in Pittsburgh, and the impact of measurement errors on the detection of a health response threshold. More recently, he has been working on modification of the Comprehensive Air Quality Model (CAMx), application of a global chemistry transport model, and issues related to global climate change. He has published about 90 papers in refereed journals. He has also served on many EPA peer review panels, External Advisory Committees on Community Modeling and Analysis System (CMAS) and on an EPA STAR project. He was a Consultant on the AQMS panel of the Council.

Hansen, D. Alan

Electric Power Research Institute (EPRI)

Since 1985, D. Alan Hansen has been the Manager of Tropospheric Studies for the Environmental Sector of the Electric Power Research Institute (EPRI). Dr. Hansen received his Ph.D. in Chemistry from the University of California, Irvine in 1973, and his B.A. in Chemistry from Southern Illinois University in 1967. Dr. Hansen's technical specialties include planning and managing fundamental and applied research on topics related to atmospheric chemistry and physics, including the study of issues related to ozone nonattainment, aerosols, acidic deposition, visibility, air toxics, source-receptor relationships, regional air quality, and global climate. The disciplines involved in his research include the design of environmental monitoring systems, numerical model development and evaluation, measurement methods development, environmental data analysis and interpretation, gas and solution phase chemistry, biogeochemical cycling, analytical chemistry, computer science, and quality assurance. Dr. Hansen's experience includes managing the Aerosol Research and Inhalation Epidemiological Study (ARIES), an air quality and exposure measurement and epidemiological study of the health effects of exposure to ambient aerosols in Atlanta, Georgia, and the Southeastern Aerosol Research and Characterization Study (SEARCH), a study of atmospheric gases, meteorology, and aerosols over a four-state area, which involves developing new measurement methods, characterizing aerosol properties as well as biases in methods for determining them, and investigating source-receptor relations. Dr. Hansen also serves as Coordinator for the North American Research Strategy for Tropospheric Ozone (NARSTO) Model Comparison and Evaluation Study, which is comparing the performance of regional air quality models used for regulatory purposes in the United States and Canada. He also has worked with the U.S. Environmental Protection Agency Air Quality Branch to develop a quality assurance manual for all Air Quality Branch field and laboratory operations and to conduct system audits of airborne monitoring systems. Dr. Hansen also co-designed and participated in a study for the Hawaii Department of Health to characterize ground level exposure to sulfur dioxide of people living near two oil-fired power plants using ambient and remote sensing instruments. Dr. Hansen has served on numerous peer review and other committees including the Synthesis Team for 2000 Ozone Assessment for NARSTO, the Advisory Committee to North American Air Monitoring and Modeling Project of the Commission for Environmental Cooperation, the Modeling and Chemistry Team of NARSTO, and the Photochemical Modeling Oversight Group for the Texas Natural Resources Conservation Commission. He has also chaired the Steering Committee for the Consortium for Advanced Modeling of Regional Air Quality (CAMRAQ) Group that coordinated research among 20 collaborating agencies with the goal of developing a comprehensive modeling system for the troposphere, and currently serves on the Advisory Committee for the Community Modeling and Analysis System, supporting development and applications of EPA's Models-3. As detailed in his resume, Dr. Hansen's work has been published in numerous peer-reviewed publications. As a research manager for an institute that outsources most of its research, Dr. Hansen has not been in a position to receive outside contract support.

Jeffries, Harvey E.

University of North Carolina

Dr. Harvey Jeffries has been a Professor of Atmospheric Chemistry in the Department of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill since 1971. He teaches graduate courses on atmospheric chemistry and photochemical modeling, including object-oriented design and programming. His research interests focus on gas-phase atmospheric chemistry, specializing in volatile organic compound photooxidation with oxides of nitrogen to produce ozone, and the mathematical modeling of urban air chemistry, specifically, the development of numerical simulation models of photochemistry that become components of large scale Eulerian models incorporating meteorological and emissions sub-models. He has performed photochemical experimental and simulation research in smog chambers for 30 years and has been the lead investigator in the creation and implementation of a new photochemical reaction simulation methodology that uses morphemes (time varying, shape-shifting molecules) to simulate the complex organic chemistry. Now, in collaboration with researchers from the UNC School of Medicine, he is conducting gas-phase and particle experiments to test air quality effects on human lung cells. Dr. Jeffries has also been active in using these models to plan public policy for air pollution control. He is a scientific advisor to the NC state regulatory agency for the 8-hour ozone non-attainment modeling for the North Carolina SIP. He is a scientific advisor to the Business Coalition for Clean Air Appeal Group for the Houston Texas 1-hour ozone nonattainment modeling. He is a member of the California Air Resources Board Reactivity Scientific Advisory Board. He was a founding member (since 1998) of the Reactivity Research Working Group, a public/private research coordinating effort involving US EPA, academia, and industry. He is a member (since 1999) of the Research Advisory Committee for the Texas Air Research Center at Lamar University in Beaumont. He is a member (since 2002) of the Science Advisory Committee of the Texas Environmental Research Consortium operated by the Houston Advanced Research Center. He was a member (1995-1997) of the US EPA's FACA Subcommittee for the Implementation of New Standards for Ozone, PM, and Regional Haze; he received an Exceptional Leadership Award from the US EPA (1997) as Cochair of Science and Technical Workgroup for this FACA Subcommittee.

Middleton, Paulette

Panorama Pathways

Paulette Middleton has almost 30 years experience leading programs that inform decisions and enhance understanding of the human-nature bond; building life-long, effective collaborations with organizations and individuals worldwide; and creating and using innovative communication strategies and assessment approaches. In 2002, she initiated Panorama Pathways, a consulting organization dedicated to creating steps to understanding and world peace. This past year she has developed several white papers and public information pieces on mercury in the west, impacts of pollution on visual air quality in the East, air quality impacts of oil and gas drilling operations in the West, benefits of reducing power plant emissions in Colorado, and nitrogen oxide issues in the western US. Middleton has been director of the Global Emissions Inventory Activity (GEIA) Center since GEIA's inception in 1990. For over a decade, she served and chaired a number of committees on the EPA Science Advisory Board. Middleton's professional background includes the University of Texas (PhD, Chemistry) the National Center for Atmospheric Research (staff scientist), the Atmospheric Sciences Research Center at the State University of New York at Albany (Research Faculty), Science & Policy Associates, Inc. (Vice President) and RAND (Director, RAND Environment). She has special expertise in integrated assessments, complex system modeling, strategic planning, multi-media communication, program/project management, business development, facilitation, and education with a focus on air quality and related environmental, energy, economic and social concerns.

Morris, Ralph

Environ Corp.

Mr. Ralph E. Morris is a Principal at ENVIRON International Corporation where he directs air quality modeling and analysis, control strategy development and evaluation, and regulatory air issues projects. He has over 20 years experience in air quality issues, with particular emphasis in the development and application of advanced air quality models and the development of air quality control plans. He has directed or was one of the key developers of many of the photochemical grid models that have been used to develop ozone attainment State Implementation Plans (SIPs) in the U.S. including the UAM, UAM-V, and CAMx. He has BA and MA degrees in mathematics from the University of California and has been an air quality consultant since 1979. At ENVIRON Mr. Morris' contract support comes from EPA and other federal agencies, state agencies, local agencies, trade organizations, and industry. Mr. Morris has been instrumental to bringing state-of-the-art air quality modeling techniques to regulatory air quality planning including demonstrating the use of photochemical grid models for ozone SIP modeling in the 1980's as leader of the EPA Five Cities UAM Study. Since then he has led the development of the next generation of nested-grid photochemical models (e.g., UAM-V and CAMx) and is currently leading the development of a state-of-the-science PMCAMx model that merges research-grade PM modules from academia (CMU and CalTech) with the CAMx platform. Mr. Morris has led or been involved in the development of ozone State Implementation Plans (SIPs) for numerous areas including: Los Angeles and San Francisco, CA; Houston/Galveston, Dallas-Fort Worth, and East Texas; Lake Michigan region; and St. Louis, MO. He has also led or been involved in the modeling of several PM SIPs, including: Los Angeles, Imperial County, and Owens Lake, CA; Rogue Valley OR; and Boise ID. Mr. Morris is currently assisting the Western Regional Air Partnership (WRAP) performing regional fine particulate and visibility modeling using the CMAQ and REMSAD models as part of the WRAP Regional Modeling Center (RMC). Mr. Morris was an original member of EPA's ozone guidance workgroup and is currently a member of EPA's fine particulate guidance workgroup. He is also currently a member of the CMAS Models-3/CMAQ External Advisory Committee (EAC) and is also a member of the Scientific, Technical, and Modeling Peer-Review Group (SMTPRAG) for the South Coast Air Quality Management District (SCAQMD).

Price, James

Texas Commission on Environmental Quality

Dr. James Price is senior scientist in the Texas Commission on Environmental Quality's (TCEQ's) Technical Analysis Division. He holds bachelor's degrees in mathematics and chemistry, a master's in biochemistry, and a doctorate in environmental engineering, all from the University of Texas at Austin. For the past twelve years his work has been primarily in the design of field research studies and air quality monitoring networks and in the analysis of the data from them to elucidate the quantitative contributions of different emission sources to observed pollutant concentrations and to identify and explain discrepancies between the results of air quality modeling of estimated emissions and measurements of actual pollutant concentrations. He led TCEQ participation in science planning for the Texas 2000 Air Quality Study of ozone, PM_{2.5}, and regional haze in the eastern half of Texas. The Texas 2000 Air Quality Study involved over 250 researchers from over 35 organizations including the Southern Oxidants Study, NOAA, and DOE along with the TNRC and Texas university researchers. He also led development, selection, and contracting of \$2.9 million in projects to accelerate the scientific analysis of data from the Texas 2000 Air Quality Study and resolve discrepancies between results from air quality modeling of estimated emissions and measured ambient concentrations. Dr. Price has been a member of the Air & Waste Management Association since 1977, serving as Chair of the Technical Program Steering Committee from 1991 to 1993 and as Technical Program Chairman for the association's 1988 Annual Meeting. Previously, Dr. Price initiated and led for over twelve years the development of Texas' environmental management program that assesses the health and welfare impacts of all air emissions from new and modified industrial sources of air emissions in the state based on public exposure to ambient concentrations of air contaminants predicted by air quality modeling of estimated air emissions from the proposed facilities.

Russell, Armistead (Ted)

Georgia Institute of Technology

Dr. Armistead G. Russell is the Georgia Power Distinguished Professor and Coordinator of Environmental Engineering at the Georgia Institute of Technology. Professor Russell arrived at Georgia Tech in 1996, from Carnegie Mellon University, and has expertise in air quality engineering, with particular emphasis in air quality modeling and analysis. He earned his M.S. and Ph.D. degrees in Mechanical Engineering at the California Institute of Technology in 1980 and 1985, conducting his research at Caltech's Environmental Quality Laboratory. His B.S. is from Washington State University (1979). Dr. Russell has been a member of a number of the National Research Council's committees, including chairing the Committee to Review EPA's Mobile Model and chairing the committee on Carbon Monoxide Episodes in Meteorological and Topographical Problem Areas, and serving on the committee on Tropospheric Ozone Formation and Measurement, the committee on ozone forming potential of reformulated fuels and the committee on Risk Assessment of Hazardous Air Pollutants. He was also a member of the EPA FACA Subcommittee on Ozone, Particulate Matter and Regional Haze, the North American Research Strategy for Tropospheric Ozone and California's Reactivity Science Advisory Committee. Previously he was on the Office of Science, Technology and Policy's Oxygenated Fuels Program Review and various National Research Council program reviews. Dr. Russell is a member of the Air and Waste Management Association, American Association for the Advancement of Science, American Society of Mechanical Engineering, Tau Beta Pi, Sigma Xi and the American Association for Aerosol Research. Dr. Russell has won a variety of competitions for animations he has developed that depict the dynamics of pollutants have won a variety of prizes here and abroad, and his work was selected as a finalist for the prestigious Smithsonian Award for Computing in the Environmental Sciences. Recently, Prof. Russell led a multi-institutional effort to conduct air quality modeling of ozone, particulate matter and acid deposition to assist the Southern Appalachians Mountains Initiative to identify effective control strategies to improve air quality in Class I areas in the southern Appalachians. This work has been extended to detailed analysis of air quality strategies in Georgia, particulate matter modeling in the Southeast and Northeast, and development of a number of advanced numerical techniques for environmental modeling. For his service to National Research Council committees, he was recently selected as a National Associate of the National Academies.

Walcek, Chris
State University of New York
Dr. Chris Walcek is Senior Research Scientist at the Atmospheric Sciences Research Center of the State University of NY Albany. He holds an M.S. and PhD, in Atmospheric Sciences from UCLA. His area of expertise and research activities focus on physical meteorology and cloud physics, with specific emphasis on acid rain, ozone formation, heterogeneous chemistry, numerical methods air quality modeling, mercury pollution, and aircraft impacts. He has chaired the American Meteorological Society Atmospheric Chemistry committee 1996-2000.